

GENERATOR.

B215283

RECEIVED

Report on Steam Turbine Machinery.

No. 123028

1951

Date of Writing Report: **27 AUG 1951** When handed in at Local Office: **27 AUG 1951** Port of: **London** Received at London Office: **17-7-51**
 Date, First Survey: **3-4-51** Last Survey: **11-8-51** 19
 (Number of Visits: **10**)
 Name of Vessel: **Rhodesia Castle**
 Name of Shipyard: **Belfour Peterborough** By whom built: **Harving & Wolff Ltd** Yard No. **1431** When built: **1951**
 By whom made: **Leis Brothers Ltd** Engine No. **320600** When made: **1951**
 By whom made: **1100** Boiler No. **20600** When made:
 Shaft Horse Power at Full Power: **550 each** Owners: **Union Castle Line Ltd.** Port belonging to: **London**
 Nom. Horse Power as per Rule: **MN 97** Is Refrigerating Machinery fitted for cargo purposes: **Yes** Is Electric Light fitted: **Yes**
 Trade for which Vessel is intended:

STEAM TURBINE ENGINES, &c.—Description of Engines: **22" dia - 8 Stage. One Curtis and 7 Rateau Impulse Type.**

No. of Turbines: **One** Ahead: **One** Direct coupled, single reduction geared to: **Dynamo** propelling shafts. No. of primary pinions to each set of reduction gearing: **One.**
 Astern: **double reduction geared**
 Direct coupled to: **Alternating Current Generator** phase: **3** periods per second rated: **750** Kilowatts. **225** Volts at **800** revolutions per minute;
 or supplying power for driving: **Aux Machef** propelling Motors, Type: **Direct Current Generator**
 rated: **750** Kilowatts. Volts at: **800** revolutions per minute. Direct coupled, single or double reduction geared to: **propelling shafts.**

TURBINE STAGING.	H. P.			I. P.			L. P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1st Expansion	1.76	22.825	1									
2nd	.845	23.885	1									
3rd	.945	23.97	1									
4th	1.11	23.235	1									
5th	1.67	23.795	1									
6th	2.47	25.095	1									
7th	3.16	26.285	1									
8th	4.85	28.475	1									
9th												
10th												
11th												
12th												

Shaft Horse Power at each turbine: H.P. **750 kW.** I.P. **6000** 1st reduction wheel **800**
 L.P. **3/2** main shaft

Motor Shaft diameter at journals: H.P. **3 1/2** Pitch Circle Diameter { 1st pinion **6.10847** 1st reduction wheel **45.8846** Width of Face { 1st reduction wheel **10"**
 I.P. **9 3/8** 2nd pinion **main wheel.** main wheel.

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings: 1st pinion **4 1/4** 1st reduction wheel **10 1/8" & 10 3/4"**
 2nd pinion **main wheel.** main wheel.

Flexible Pinion Shafts, diameter at bearings: External 1st **4 1/4** 2nd **5.88587**
 Internal 1st **4 1/4** 2nd **diameter at bottom of pinion teeth**

Wheel Shafts, diameter at bearings: 1st **5 1/2 & 7 1/2** diameter at wheel shroud, { 1st **4 1/8** Generator Shaft, diameter at bearings **and 46.0446.**
 main **Propelling Motor Shaft, diameter at bearings.**

Intermediate Shafts, diameter as per rule **Thrust Shaft, diameter at collars** as per rule **as fitted.**
 as fitted **as fitted.**

Tube Shaft, diameter as per rule **Screw Shaft, diameter** as per rule **Is the { tube } shaft fitted with a continuous liner {**
 as fitted **as fitted.** as fitted **as fitted.**

Bronze Liners, thickness in way of bushes as per rule **Thickness between bushes** as per rule **Is the after end of the liner made watertight in the**
 as fitted **as fitted.** as fitted **as fitted.**

Propeller boss **If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner**
the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive.
two liners are fitted, is the shaft lapped or protected between the liners. **Is an approved Oil Gland or other appliance fitted at the after end of the tube**
aft. **If so, state type.** **Length of Bearing in Stern Bush next to and supporting propeller.**

Propeller, diameter **Pitch.** **No. of Bades.** **State whether Moveable.** **Total Developed Surface.** **square feet.**
Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine **Can the H.P. or I.P. Turbines exhaust direct to the**
condenser. **No. of Turbines fitted with astern wheels.** **Feed Pumps** { **No. and size.**
How driven.

Pumps connected to the Main Bilge Line { **No. and size.**
How driven.

Ballast Pumps, No. and size. **Lubricating Oil Pumps, including Spare Pump, No. and size** **1 main pump Gray type 30 GPM.**
1 Oil Anti-Fouling Pump 30 GPM.
are two independent means arranged for circulating water through the Oil Cooler. **Suctions, connected both to Main Bilge Pumps and Auxiliary**
Bilge Pumps, No. and size:—In Engine and Boiler Room. **In Pump Room.**

Holdings, &c. **Main Water Circulating Pump Direct Bilge Suctions, No. and size.** **Independent Power Pump Direct Suctions to the Engine Room**
pipes, No. and size. **Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes.**

Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges.
Are all Sea Connections fitted direct on the skin of the ship. **Are they fitted with Valves or Cocks.**

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates. **Are the Overboard Discharges above or below the deep water**
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel. **Are the Blow Off Cocks fitted with a spigot and brass**
covering plate. **What pipes pass through the bunkers.** **How are they protected.**

What pipes pass through the deep tanks. **Have they been tested as per rule.**
Are all Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times.

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery
spaces, or from one compartment to another. **Is the Shaft Tunnel watertight.** **Is it fitted with a watertight door.** **worked from.**

JM
25/9/51

BOILERS, &c.—(Letter for record.....) Total Heating Surface of Boilers.....

Rpt. 4c.

Is Forced Draft fitted..... No. and Description of Boilers..... Working Pressure.....

Is a Report on Main Boilers now forwarded?.....

Date of writing R.....

Is { a Donkey } Boiler used?..... If so, is a report now forwarded?.....
(an Auxiliary)

No. in Sur Reg. Book.....

Is the donkey boiler intended to be used for domestic purposes only.....

Plans. Are approved plans forwarded herewith for Shafting Pl. 20/7/50 Main Boilers..... Auxiliary Boilers..... Donkey Boilers.....
(If not, state date of approval)

Superheaters..... General Pumping Arrangement..... Oil Fuel Pumping Arrangements.....

Built at.....

Owners.....

SPARE GEAR.

Has the spare gear required by the Rules been supplied? Yes.

State the principal additional spare gear supplied. 1 Set of Turbine & Gearbox Bearings. 1 Worm & Wheel for Governor Drive. 1 Set of Labyrinth Stands. 1 Governor Spindle, Valve & Seat. 1 Set of Thrust Pins. 1 Set of Governor Wearing Parts. 1 Complete Set of all Gearing. 1 Closed Sea Control Internal Valve. 1 Closed Sea Control Valve Half Shaft. 1 Closed Sea Control Valve & Gear Lines. 1 Set of Air Ejector Nozzles. 1 Air Ejector H.R.V. 1 Extractor Pump Impeller. 1 Circulating Pump Impeller. 1 Pump Drive Shaft.

Oil Engines made.....

Generators made.....

No. of Sets.....

Is Set intended for.....

OIL ENGINE.....

Maximum pressure.....

Mean indicated pressure.....

Is there a bearing.....

Flywheel dia.....

Crank Shaft, dia.....

Flywheel Shaft, dia.....

Are means provided.....

Are the cylinders.....

Cooling Water.....

Lubricating Oil.....

Air Compressor.....

Scavenging Air.....

AIR RECEIVER.....

Is each receiver.....

Can the internal.....

Is there a drain.....

High Pressure A.....

Seamless, lap weld.....

Starting Air Rec.....

Seamless, lap weld.....

ELECTRIC C.....

Pressure of supply.....

Alternating cur.....

On and off.....

Are all terminals.....

Shielded that t.....

the generators.....

the generators.....

Details of driven.....

PLANS.—Are a.....

Have Torsional V.....

PARE GEAR.....

The foregoing is a correct description,

PETER BROTHERHOOD LTD.
A. J. Bellamy
DIRECTOR

Dates of Survey while building { During progress of work in shops - - 29/5/51, 1/6/51, 12/6/51, 2/7/51, 17/7/51.
During erection on board vessel - - -
Total No. of visits. 5 du stops.

Dates of Examination of principal parts—Casings 12/6/51. Rotors 12/6/51. Blading 15/7/51, 17/7/51. Gearing 2/7/51, 17/7/51.

Wheel shaft 5/7/51, 17/7/51. Thrust shaft - Intermediate shafts - Tube shaft - Screw shaft -

Propeller - Stern tube - Engine and boiler seatings - Engine holding down bolts -

Completion of fitting sea connections. Completion of pumping arrangements. Boilers fixed. Engines tried under steam.

Main boiler safety valves adjusted. Thickness of adjusting washers. SVA. 79242 60747

Rotor shaft, Material and tensile strength. Longa Steel 50.8 x 51.0 tons. Identification Mark. 815. 9551. F 565

Flexible Pinion Shaft, Material and tensile strength. Identification Mark.

Pinion shaft, Material and tensile strength. Longa Steel. 47.4 x 47.6 tons. Identification Mark. 4757. JS. 15/6/51

1st Reduction Wheel Shaft, Material and tensile strength. Longa Steel. 32.8 x 32.0 tons. Identification Mark. 1422 SW. 22/9/51

Wheel shaft, Material. Identification Mark. Thrust shaft, Material. Identification Mark.

Intermediate shafts, Material. Identification Marks. Tube shaft, Material. Identification Marks.

Screw shaft, Material. Identification Marks. Steam Pipes, Material. Test pressure.

Date of test. 4/7/51 and 13/7/51. Is an installation fitted for burning oil fuel.....

Is the flash point of the oil to be used over 150°F..... Have the requirements of the Rules for the use of oil as fuel been complied with.....

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo..... If so, have the requirements of the Rules been complied with.....

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with.....

Is this machinery a duplicate of a previous case..... Messrs Pol's Brotherhood Ltd Standard 22" dia Turbine. If so, state name of vessel.....

General Remarks. (State quality of workmanship, opinions as to class, &c.) These two turbine generator engines together with their

reduction gearing and integral condensing plant have been built under survey in accordance with the approved

plans and the requirements of the rules. Steel used in the manufacture has been made at works approved

by the Committee, and with the exception of the turbine rotors, under the supervision of the Surveyors' Survey

the two rotors have been taken from stock and accepted on manufacturer's Test Certificates verified by Russell

Check Test's office machinery, and considered satisfactory. The workmanship is good, and the machinery

is in my opinion, eligible to be fitted in a closed ship. Satisfactory full power running trials and

governor tests have been witnessed at the maker's works, with each turbine coupled to its respective dynamo

but only approx 20% overload could be obtained due to the limited capacity of the resistance tanks. It

is recommended that paralleling trials be carried out on board as each generator was running separately on Test bed

Turbine No 20600 A coupled to A.M. Dynamo No 9882 and Turbine No 20600 B to A.M. Dynamo No 9881.

The amount of Entry Fee ... £ 43 6 : : When applied for.

Special ... £ 36 10 : : 27/8/19 51.

Donkey Boiler Fee ... £ : : When received.

Travelling Expenses (if any) £ 5 : 5 : : 19.....

TUES. 4 DEC 1951

Committee's Minute.....

Assigned. Sue F.E. Welch rpt. Bel 15883

These Generating Sets installed on board, and examined under working conditions with satisfactory results.

L. Roth

Engineer Surveyor to Lloyd's Register of Shipping.

Lloyd's Register Foundation

Certificate (if required) to be sent to
(The Surveyors are requested not to write on or below the space for Committee's Minute.)